

# INTRODUCTION

You have recently purchased a BABOLAT SENSOR EXPERT stringing machine - thank you for making the right choice! This manual has been written specially to help you get used to the way the machine works and to make sure that it meets your expectations. Please READ THESE INSTRUCTIONS CAREFULLY to give yourself a good idea of the precautions to be taken when you use your new machine and to look after it in the best possible way.

**Keep this manual to hand** so that you can consult it at any time, and make sure that it stays with the machine if ever lent or sold.

A VHS video cassette comes with your SENSOR EXPERT stringing machine. We suggest you to watch it in addition to reading this manual, so that you will have a good understanding of the main operations for setting up and using the machine, as well as the actions required for stringing.

This machine is intended for professional use and is designed for the stringing of all types of rackets - tennis, badminton, squash, etc. - using strings made of synthetic materials or natural gut. It must be used by operators who are qualified and well-versed in the operating rules and safety instructions set out in this manual.

Your SENSOR EXPERT stringing machine is "CE" certified and is in conformity with machine directive 89/392/EC. We will not assume liability if any alterations are made to the machine without our authorisation, thus undermining the safety conditions and invalidating any warranty clauses.

We also wish to draw your attention to the fact that the use of accessories or products other than those recommended by BABOLAT may present risks for which we will not be liable.

As we want you to make the most of the latest technology and new equipment, as well as to benefit from our experience, our machines may undergo technical or design changes. As a result, some of the features and information in this manual may be changed without prior notice and without any obligation to up-date it.

Should you encounter any problems or have any questions about your SENSOR EXPERT stringing machine, please do not hesitate to contact your nearest BABOLAT After-Sales Service Centre.



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## SAFETY PRECAUTIONS

The SENSOR EXPERT stringing machine has been designed to provide a reliable and perfectly safe service. However, it could become a potential source of danger in the event of any incorrect or poor maintenance.

In this manual, the paragraphs concerning safety are therefore drawn to your attention by the following symbols:

### **Warning of a risk of serious personal injury.**

*BE CAREFUL: Risk of damaging the machine.*

***It is very important that operators should be familiar with the functioning of any controls on the machine and be aware of its capacities and limits. They must strictly comply with the instructions for use and any safety precautions indicated in this manual.***



# ON RECEPTION

## ◆ RECOMMENDATIONS

Before opening the boxes, make sure that there is no apparent damage. If you notice that the packaging is not in perfect condition, make sure that a reservation to this effect is recorded on the carrier's delivery docket so that your rights are protected. Also verify that the specification of the machine corresponds to your order, by reading the label attached to the outside of the boxes.

## ◆ UNPACKING THE MACHINE

We have designed packaging that is specially adapted to the transporting of your machine. We advise you to keep it carefully because it should be re-used for storage purposes or if ever you need to return it to the manufacturer.

***We will not be liable for any damage caused to machines that are sent back without their original packaging.***

***BE CAREFUL:*** *this operation must be carried out by two people.*

- Remove any accessories from the two boxes, except for the machine itself, until you are ready to install it.

The boxes should contain the following items:

### Box 1

- 1 cupboard specially designed for the machine, assembled with an incorporated power cable

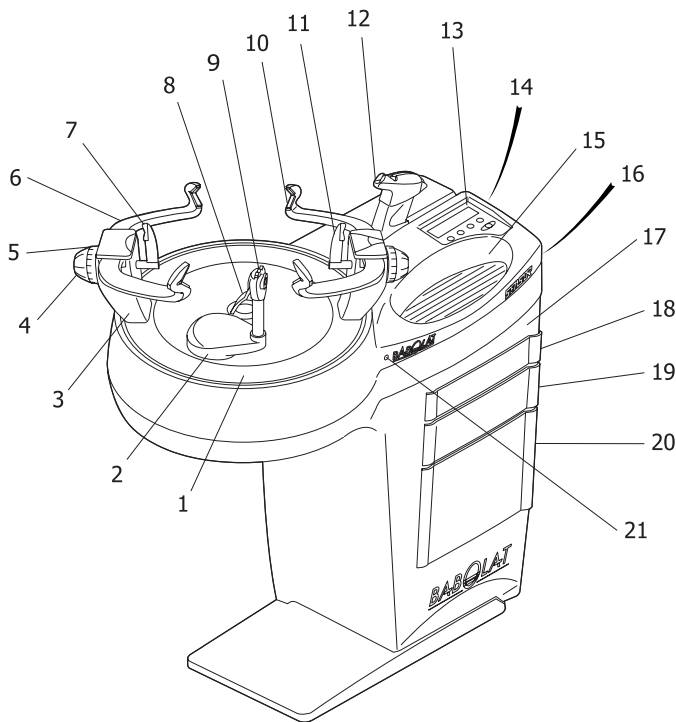
### Box 2

- 1 stringing machine
  - 1 set of 2 billiards for tennis rackets
  - 1 or 2 clamp(s) with 3 teeth, depending on the version
  - 1 set of spare V-shaped polyamid pads for billiards
  - 1 set of spare pads for arms
  - 1 protection cover in PVC-coated fabric
  - 1 set of Allen keys, sizes 4, 5 and 6
  - 1 user's manual
  - 1 demonstration video
  - 2 spare fuses
  - 1 64 mm adapter
- Make sure that you have all these items. If not, contact your BABOLAT dealer immediately.

***BE CAREFUL:*** *remove the machine from the pallet without holding it by the arms or by the pulling head. Place the machine on its cupboard (see the section "INSTALLATION").*

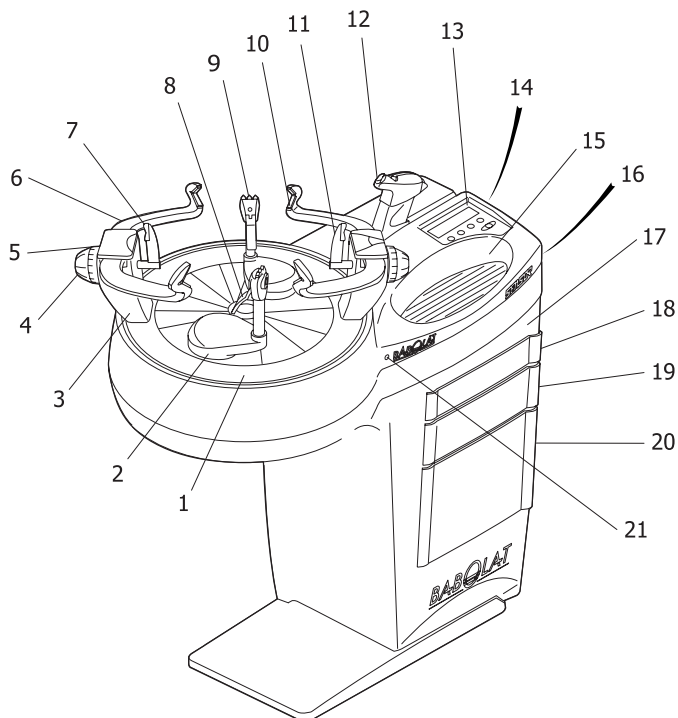
## DESCRIPTION

### ◆ SENSOR EXPERT MONO



- |  |  |
|--|--|
| 1 - Circular turntable with magnetic lock      | 11 - Billiard                                |
| 2 - Clamp-holder with automatic locking system | 12 - Sensor pulling head with raising system |
| 3 - Post                                       | 13 - Control panel                           |
| 4 - Billiard control knob                      | 14 - Rack                                    |
| 5 - Profiled arm control knob                  | 15 - Tool bay                                |
| 6 - Profiled arm                               | 16 - String measurer entrance                |
| 7 - V-shaped billiard pad                      | 17 - Polyester cupboard                      |
| 8 - Clamp locking lever                        | 18 - Document drawer                         |
| 9 - 3-tooth clamp                              | 19 - Tool storage drawer                     |
| 10 - Arm pad                                   | 20 - Reel drawer for 7 reels of string       |
|  | 21 - String measurer exit                    |

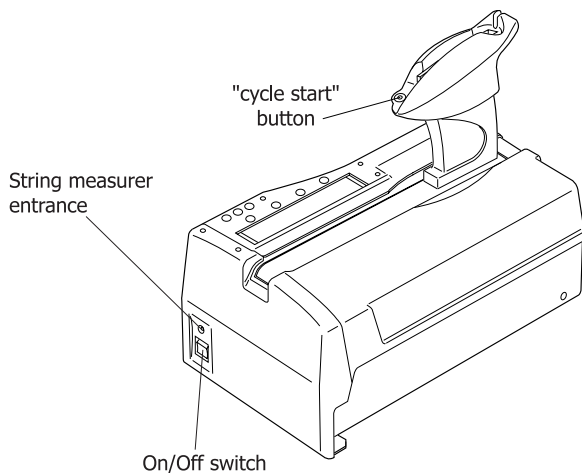
## ◆ SENSOR EXPERT DUAL



- |  |  |
|--|--|
| 1 - Circular turntable with magnetic lock      | 11 - Billiard                                |
| 2 - Clamp-holder with automatic locking system | 12 - Sensor pulling head with raising system |
| 3 - Post                                       | 13 - Control panel                           |
| 4 - Billiard control knob                      | 14 - Rack                                    |
| 5 - Profiled arm control knob                  | 15 - Tool bay                                |
| 6 - Profiled arm                               | 16 - String measurer entrance                |
| 7 - V-shaped billiard pad                      | 17 - Polyester cupboard                      |
| 8 - Clamp locking lever                        | 18 - Document drawer                         |
| 9 - 3-tooth clamp                              | 19 - Tool storage drawer                     |
| 10 - Arm pad                                   | 20 - Reel drawer for 7 reels of string       |
|  | 21 - String measurer exit                    |

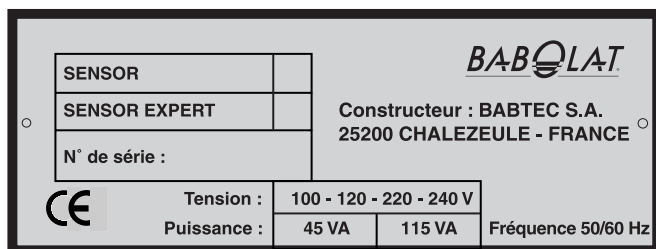
## ◆ "RACK" CONCEPT

The rack is the heart of your stringing machine. If it breaks down, you just need to take it out and replace it with the one you will receive from your BABOLAT After-Sales Service Centre (for rack removal, see the paragraph "Changing voltage or fuses").



## ◆ IDENTIFICATION

The identification plate is attached to the bottom of the machine, near the power socket.





## ◆ CHARACTERISTICS

### Dimensions (overall)

Length	1020 mm
Width	520 mm
Height	1160 mm
Weight	Sensor Expert mono machine 50 kg Sensor Expert dual machine 56 kg Cupboard 55 kg

### Electrical specifications

Electrical supply	100 V, 120 V, 220 V, 240 V Single phase + earth
Frequency	50 / 60 Hz
Absorbed power	0.115 kW
Voltage of control circuit	24 Vdc
Voltage of power circuit	24 Vdc

### Noise level

< 73 dB<sub>(A)</sub>

### String tension

Range between	5 and 40 kg for pitch of 0.1 kg 11.5 and 88 lb for pitch of 0.5 lb
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## ◆ OPTIONS

Stringing kit for badminton racket, made up of:

- 2 badminton billiards,
- 1 or 2 badminton clamps (depending on version, mono or dual),
- 1 "H" adapter for racket head,
- 4 interlocking V-shaped caps.

## ◆ TOOLS (sold separately)

To make your work easier, BABOLAT has designed a whole range of specific tools for stringing. They are presented in a case and available under the code number 02054.

## INSTALLATION

### ◆ POSITIONING

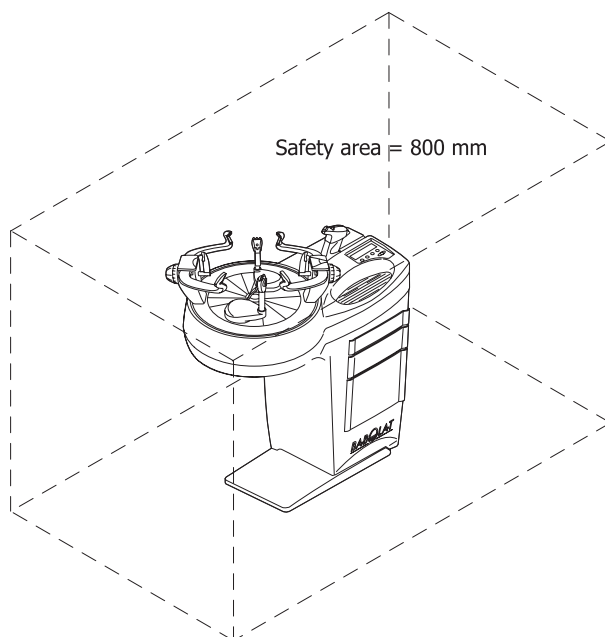
- Place the equipped machine cupboard on a flat surface near an electricity supply and in a space that is sufficiently open to give the operator room to move, allowing for a minimum safety area of 800 mm around the machine.

The following conditions should be respected for the environment of the workstation:

- temperature: 10 to 35 °C,
- relative humidity: 30 to 70 %,
- minimum lighting: 300 lux.



**Make sure you protect the machine against splashes of water and never leave it in the rain.**



## ◆ ASSEMBLING

**BE CAREFUL:** *because of the weight of the machine and its cupboard, any operations of installation, assembly and adjustment must strictly be carried out by 2 people.*

- Place the cupboard in the required position.
- On the side of the cupboard, remove the BABOLAT decorative plate (1), by loosening the 6 fixing screws with a star screwdriver (not supplied).



- Place the stringing machine on its cupboard, perpendicular to the latter.
- Loosen and remove the transport screw (2) and keep it in a safe place with the packaging.



**BE CAREFUL:** *whenever you move the machine, this screw should be replaced completely in order to avoid the accidental rotation of the turntable during the transport, especially if you return your machine. Failure to comply with this instruction may limit the application of the warranty conditions.*

- Position the machine above its cupboard by lifting it, on one side by the base of the rack, and on the other by the 2 posts (3).



**Never lift the machine by holding onto the profiled arms or the Sensor head.**

- Slot the machine into its cupboard.
- Plug in the power cable under the machine (4).
- Replace the BABOLAT decorative plate.



## ◆ CONNECTING TO POWER SUPPLY

**Make sure you always connect the machine up to an earthed mains socket.**

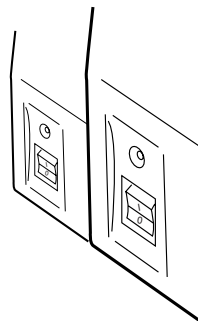


**Extension cables should be carefully chosen, assembled and maintained. Your safety will obviously be protected if the insulation is in good condition. Cables should be inspected on a regular basis and replaced, rather than repaired, if found to be faulty. Adapt any electrical extension lengths and sections depending on the work at hand.**

***BE CAREFUL:** make sure that the voltage indicated on the identification plate corresponds to that of the local grid.*

### Powering-up

- Plug the power cable into a properly earthed mains socket.
- Switch the machine on using the On/Off switch and a welcome message will appear on the display screen. If this is not the case, please refer to the section "TROUBLESHOOTING".



### Changing voltage or fuses

For this job you will need to remove the rack from the machine.

- Turn off the machine.
- Remove the BABOLAT decorative plate on the side of the cupboard.
- Remove the power cable from the mains.
- Unplug the right-angle plug on the power cable from the machine.
- Loosen the 2 fixing screws (1) by two turns, using the size-4 Allen key.
- Remove the rack from the machine by pulling on the lower handle (2).
- Place it on a table to provide free access to the lower part.



- Remove the fuse-holder located under the rack (3) near the power socket, using a flat screwdriver.



## *Changing voltage*

- Remove the voltage selector, then switch it to the required voltage.
- Then change the two fuses depending on the new voltage.

100 V and 120 V fuses = 3.15 A T

220 V and 240 V fuses = 1.6 A T

In case of doubt, call the BABOLAT After-Sales Service Centre.

## *Changing fuses*

Type of fuse: HPC 5x20 mm ceramic

**BE CAREFUL:** in the event of a problem, you should change both fuses at the same time.

***The warranty will be invalidated by the use of any fuses other than those recommended by BABOLAT.***

## USING THE MACHINE

### ◆ WARNINGS

***BABOLAT will not be liable for any direct or indirect damage caused by incorrect installation, poor maintenance, alterations or improper usage. We will also be cleared of liability in the event of any failure to comply with standard requirements for the prevention of accidents and fire or for the safety of electrical installations.***

***Never open a stringing machine without being authorised by BABOLAT.***

***Never apply any varnish or paint to the string above the machine, as stains from these products may cause permanent damage to the housing and mechanical parts.***

***Any failure to comply with these last two clauses will render the warranty invalid.***



**To turn the stringing machine on or off, do not use the power cable. Press the On/Off switch to avoid any risk of electrocution or short-circuiting due to poor contacts.**

**Never move or open the stringing machine without unplugging it first.**

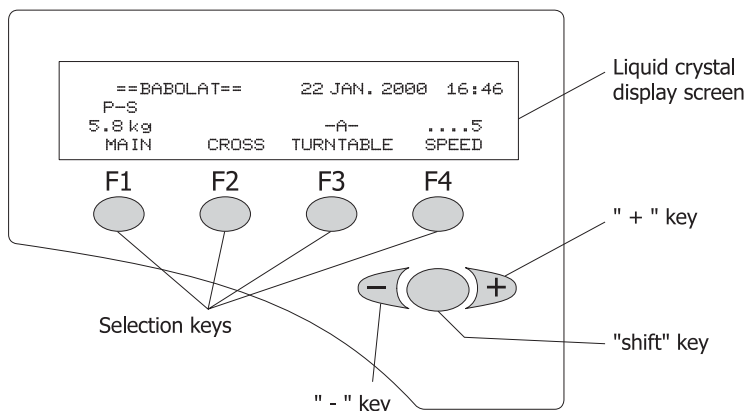
**Never let the machine be used by children or persons not familiar with the instructions. Make sure that nobody enters the 800-mm safety area around the machine whilst it is in use.**

**Never leave your workstation before making sure that you have taken the precaution of putting it in the shield position ("shield" menu on control panel) or turning it off (at On/Off switch).**

***BE CAREFUL:*** *Your stringing machine has been adjusted in the factory using precision instruments. Except in the case of accident, the factory adjustments should not be altered throughout the life of the machine, otherwise you will have to return the rack to the manufacturer.*

## ◆ THE CONTROL PANEL

The control panel allows you to communicate with the machine. It has a liquid crystal display screen with 4 lines of 40 characters. Using its 4 selection keys and 3 scrolling keys, the control panel allows you to change the user settings on the machine and to view the current values to find out its status. The factory settings and those entered by the user are stored in an EEPROM memory so that they are not deleted when the machine is turned off.



Using the keys on the control panel you can shift between the various screens and change the options or values associated with the menus in order to adapt the machine's functions to your demands.

There are 3 ways of changing the machine data:

- by activating/deactivating a setting,
- by changing a digital setting,
- by selecting an option on a menu.

It is very straightforward to use the control panel and change the options or values assigned to the menus. Read the following paragraphs carefully and try it out for yourself. Do not worry about making a mistake as there is no danger for the machine - you will just need to start again from scratch.


## The scrolling keys

With the three keys you have various possibilities depending on the type of action or series of actions that you wish to carry out.

### "Step by step" mode





Press once on  or  keys

Normal step-by-step selection

Example with  key:

25.0 kg  $\Rightarrow$  25.1 kg  $\Rightarrow$  25.2 kg

Press at the same time

on  and  keys  
or on  and  keys

Quick "step-by-step" selection

Example with  and  keys:





25.0 kg  $\Rightarrow$  26.0 kg  $\Rightarrow$  27.0 kg

### "Scrolling" mode

Hold down the  or  keys

Normal selection by scrolling

Hold down at the same time

the  and  keys  
or the  and  keys

Quick selection by scrolling

### Buzzer

The buzzer sounds every time you hold down the "shift" key.

## The selection keys

Using the 4 keys "F1" to "F4" you can select one of the menus on the current screen in order to change the data. By holding down the keys "F1" or "F2" for 3 seconds you can also move from screen 1 to screen 2 (see paragraph "The screens").



## Convention

In the following paragraphs, you will find pictures of the various screens displayed by the digital screen with the method for moving between screens, presented in the form of logic diagrams. To make it easier to understand we will be using the following symbols to represent the pressing of keys:

 key

Quick press "shift"



Long press "long shift"



Long press followed immediately by quick press

 key

Press



Press together with "shift" key

 key

Press



Press together with "shift" key

Selection keys

Quick press

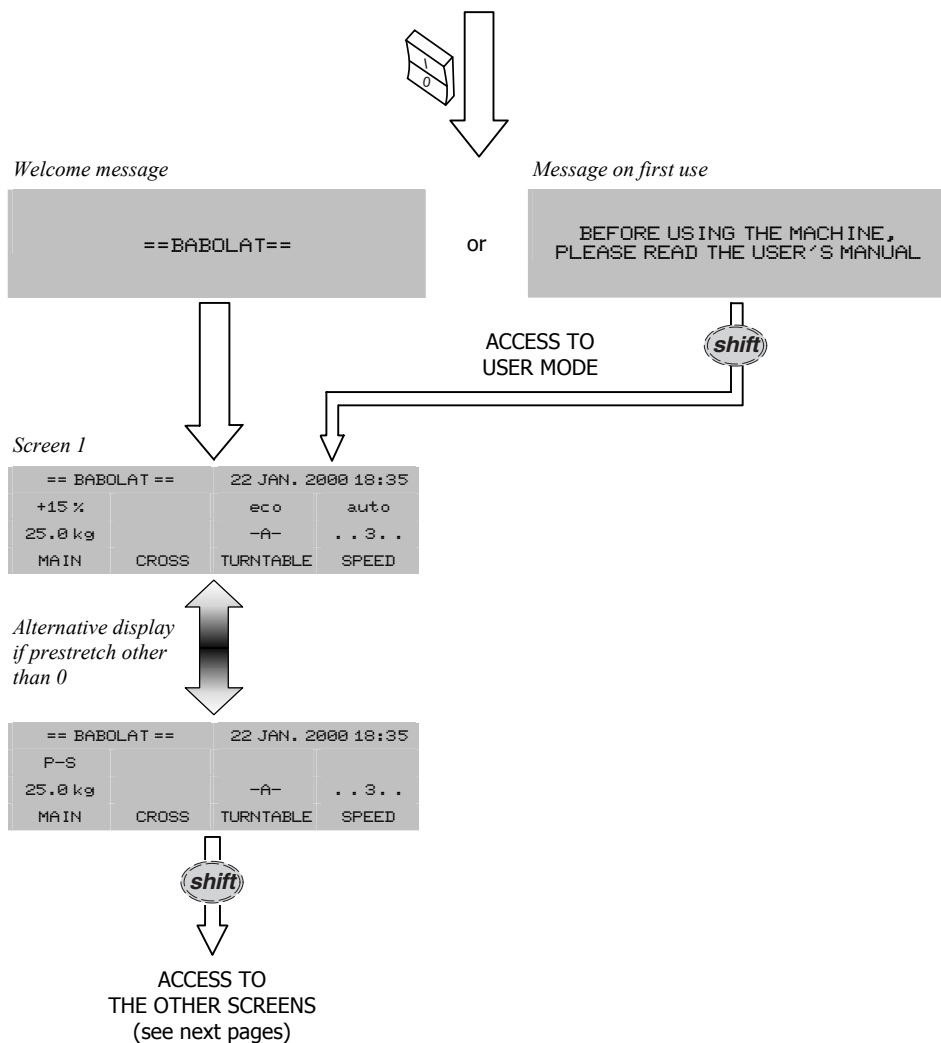
   

Press for 3 seconds

## ◆ THE SCREENS

### At power up



## Access to the various screens

Screen 1

== BABOLAT ==		22 JAN. 2000 18:35	
+15 %		eco	auto
25.0 kg		-M-	..3..
MAIN	CROSS	TURNTABLE	SPEED

Screen 2

VERSION	01.01.P	22 JAN. 2000 18:35	
End : Long shift			
LOCKED	YES	+2.0 Kg	-1.0 Kg
CLAMPS	HEAD	>KNOT<	CROSS

shift

F1  
OR  
F2

shift

Screen 3

Next screen : Shift, End : Long shift			
ECO : DESACT. CLAMPS AFTER 15 MN			
2. . . .	HAND	NO	+15 %
CONTRAST	BACK	ECO	>STRETCH<

shift

\* only on mono version

Screen 4

Next screen : Shift, End : Long shift			
ENGLISH	kg	m	
LANGUAGE	UNIT	UNIT	

shift

Screen 5

Next screen : Shift, End : Long shift			
SHIELD	YES		
	BIP		

shift

Screen 6

Next screen : Shift, End : Long shift			
22	JAN.	2000	18:35
>DAY<	MONTH	YEAR	HOUR

shift

Screen 7

Next screen : Shift, End : Long shift			
WORKING TIME ... 18	DIAG.... +16	+16	
NR OF RACKETS... 10	SERIAL NR...	0012	
TRACTION CYCLE 371	RACK NR.....	0012	

shift

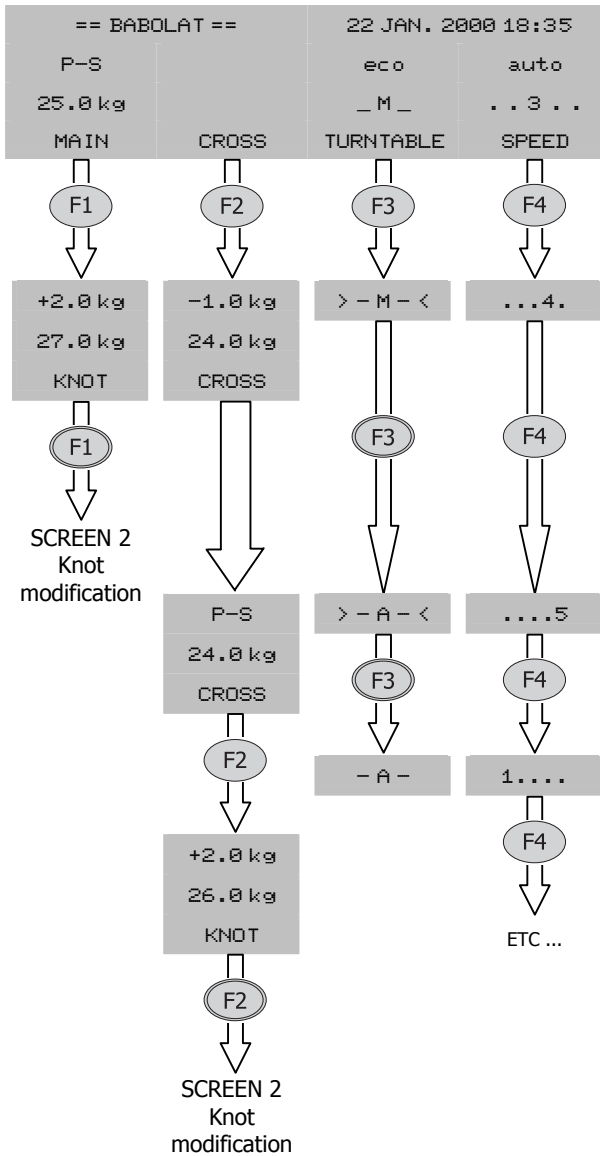
RETURN TO SCREEN 3

## Description of screens and menus

### Screen 1

MAIN	Display and modification of tension for main strings
25.0 kg	⇒ Current value (default or last-used setting) Direct modification by pitch of 100 g (0.5 lb) or pitch of 1 kg (10 lb) using the scolling keys <i>Tension range: 5 to 40 kg (11.5 to 88 lb)</i>
PS⇄+15 %	⇒ Pre-set value of prestretch on main strings <i>If prestretch = 0 ⇒ no message</i>
CROSS	Display of tension for cross strings
24.0 kg	⇒ Current value = tension MAIN +/- CROSS correction
-1.0 kg	⇒ Pre-set value of over or under-tension (CROSS correction) <i>This value appears for 3 seconds</i>
PS⇄+15 %	⇒ Pre-set value of prestretch on cross strings <i>If prestretch = 0 ⇒ no message</i>
KNOT	Display of tension for knot traction cycle on MAIN and CROSS
	Over-tension to compensate for loss of tension in knot (the command is only valid for a traction cycle)
27.0 kg	⇒ Current value on main strings = tension + KNOT correction on main strings or
26.0 kg	⇒ Current value on cross strings = tension + KNOT correction on cross strings
+2.0 kg	⇒ Pre-set over-tension value (KNOT correction)
TURNTABLE	Display and selection of turntable locking mode, manual or automatic
	Display of selected mode
-A-	⇒ Free turntable, locked automatically in each traction cycle
> -A- <	⇒ Turntable locked in automatic mode
> -M- <	⇒ Turntable locked in manual mode
-M-	⇒ Free turntable in manual mode
ECO	⇒ Indicates that the energy-saving mode is activated
SPEED	Display and selection of pulling head speed
. . 3 . .	⇒ Current value. Selection possible from a range of 1 to 5
AUTO	⇒ Indicates that the automatic return of the pulling head is activated

## Screen 1



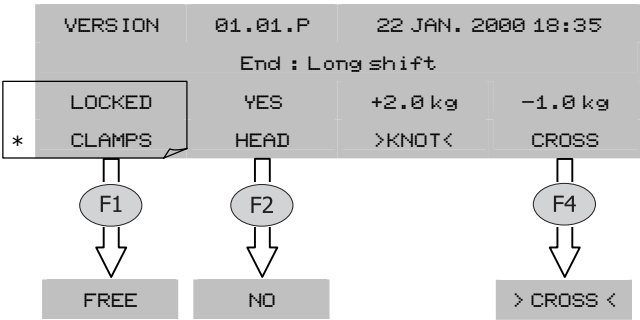
## Screen 2

CLAMPS	Selection of clamp-holder unlocking option when the stringing is completed	
LOCKED	⇒	Current selection. FREE: unlocked
HEAD	Selection of option Sensor head raising during traction cycle	
YES	⇒	Current selection. Select YES or NO
>KNOT<	Setting of KNOT correction	
+2.5 kg	⇒	Current value (default or last-used setting) Direct modification by pitch of 100 g (0.5 lb) or by pitch of 1 kg (10 lb) using scrolling keys <i>Over-tension range: 0 to 5 kg (0 to 11 lb)</i>
>CROSS<	Setting of CROSS correction	
-1.0 kg	⇒	Current value (default or last-used setting) Direct modification by pitch of 100 g (0.5 lb) or by pitch of 1 kg (10 lb) using scrolling keys <i>Range of over or under-tensions: -10 to +10 kg (-22 to +22 lb)</i>

## Screen 3

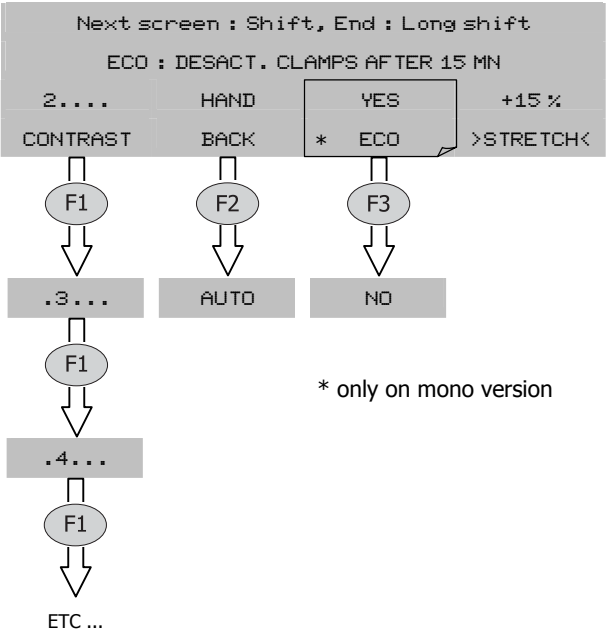
CONTRAST	Adjusting the contrast of the display	
2....	⇒	Current selection. Possible selection from a range of 1 to 10 NB: this adjustment may cause the display to disappear. In this case continue pressing to obtain a correct contrast.
BACK	Selection of Sensor head return function after clamp locking	
HAND	⇒	Current selection. Select AUTO or HAND
ECO	Selection of energy-saving mode, deactivating clamp-holder after 15 minutes (only on mono version)	
YES	⇒	Current selection. Select YES or NO
>STRETCH<	Setting of prestretch	
	Modification expressed as a percentage of the tension value. Its purpose is to create a prestretch at the beginning of the traction cycle to prevent the tension being lost too quickly on certain types of string	
15 %	⇒	Current value (last-used adjustment) Direct modification by pitch of 1 % or pitch of 5 % (limited to 20 %) using scrolling keys

Screen 2



\* only on mono version

Screen 3



\* only on mono version

## Screen 4

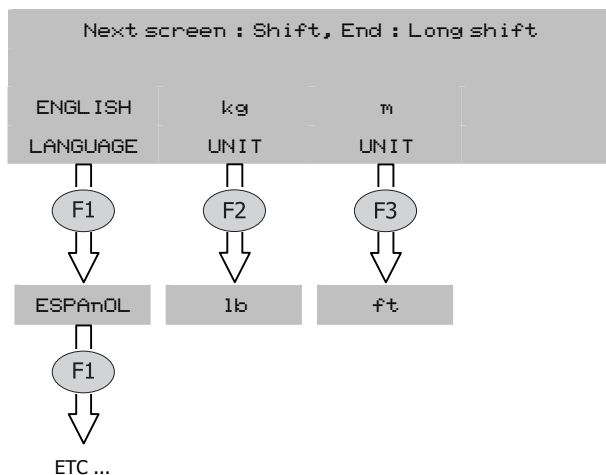
LANGUAGE	Selection of language for display of messages	
ENGLISH	⇒	Current selection. Choose between 5 languages (French, German, English, Spanish, Italian)
UNIT	Selection of measurement units for display of digital values	
kg	⇒	Current selection. Select kg or lb (1 kg = 2.20 lb)
m	⇒	Current selection. Select m or ft (1 m = 3.28 ft)

## Screen 5

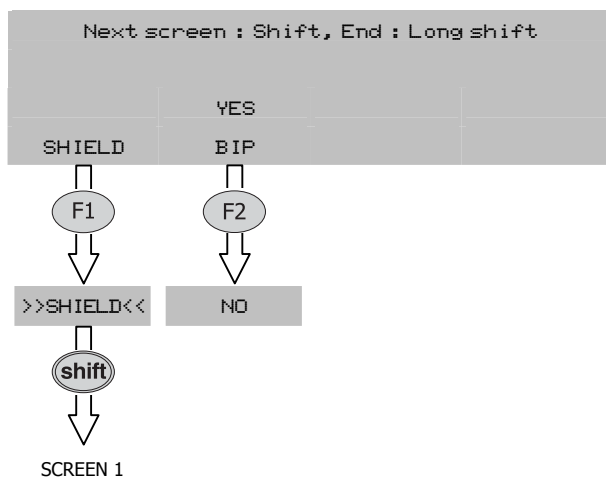
SHIELD	Making the machine safe by locking the functions and pulling head	
>> SHIELD <<	Safety activated	
BIP	Buzzer sounds when pulling head attains equilibrium	
YES	⇒	Current selection. Select YES or NO



*Screen 4*



*Screen 5*



## Screen 6

20 JAN. 2000 18:35    Date and time updating

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DAY  
MONTH    ⇒    Modification with the scrolling keys  
YEAR  
HOUR

## Screen 7 - Machine configuration (read only)

WORKING TIME	Length of time for which the machine has been on (in hours)
NR OF RACKETS	Number of rackets strung by machine (approximate value calculated according to number of tractions)
TRACTION CYCLE	Number of tractions completed by machine
DIAG	Machine status
SERIAL NR	Serial number of machine
RACK NR	Serial number of rack

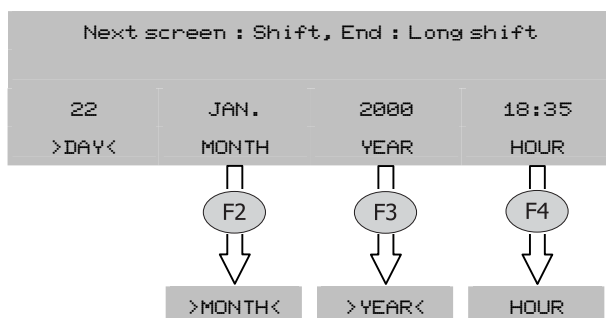
## ◆ FACTORY SETTINGS

The factory settings are the current settings when you start the machine up for the first time. They will remain programmed until you decide to change them.

The factory settings are as follows:

- MAIN: 25.0 kg
- CROSS: -1.0 kg
- PRESTRETCH: 0 %
- KNOT: + 2.0 kg
- TURNTABLE: - M -
- SPEED: 3
- HEAD: YES
- LANGUAGE: depends on the machine's destination country
- BIP : YES
- ECO: NO (mono version only)
- BACK: HAND

## Screen 6



## Screen 7

Next screen : Shift, End : Long shift

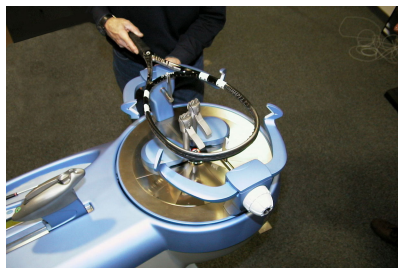
WORKING TIME ....	18	DIAG....	+16	+16
NR OF RACKETS....	10	SERIAL NR.....		0012
TRACTION CYCLE ..	371	RACK NR.....		0012

## ◆ POSITIONING THE RACKET

The SENSOR EXPERT stringing machine is designed to take all types of rackets, even oversized ones.

**BE CAREFUL:** *the racket locking system is designed to hold it in position and to prevent distortion when stringing. Any over-tightening of the arms and billiards may distort the racket and change the tension after stringing.*

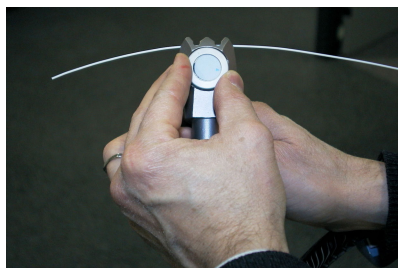
- Position the racket according to the symbols marked on the post.
- Hold the racket by its handle with one hand, and with the other turn the billiard control knob (on the side of the racket throat) to bring the V-shaped pad of the billiard into contact, between 2 holes and over the positioning symbol marked inside the racket.
- Turn the control knobs of the arms to bring the pads into contact with the outside of the racket. Make sure the racket is more or less centred between the arm pads, then tighten the arms slightly.
- Turn the billiard control knob (on the side of the racket head) until you bring the V-shaped pad of the billiard into contact, between 2 holes and in line with the first billiard. Tighten the billiard slightly.



## ◆ ADJUSTING THE CLAMP

The gap between the jaws should be adapted to the gauge of the string that is used. This can be adjusted by turning the wheel as follows:

- thread a string between the jaws of the clamp,
- activate the locking lever to tighten the string between the jaws. If any resistance stops it from locking, that means the gap is not wide enough. Extend it by loosening the wheel,
- pull on the string by hand and it should not slide between the jaws. If this is not the case, reduce the gap by tightening the wheel.

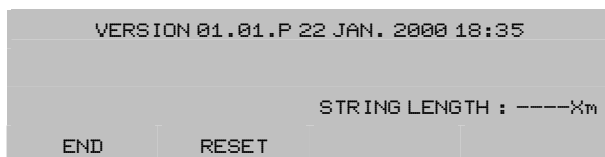


**BE CAREFUL:** *adjust the clamp gap to secure the string properly without crushing it, as this would cause distortion and cracking.*

## ◆ STRING MEASURER

The SENSOR EXPERT stringing machine has a system for measuring the length of the string.

If you wish to cut a string to a given length, make sure the control panel displays screen 1. Then insert the end of the string into opening (A), above the On/Off switch, push in the string and read the measurement (to the nearest 3 cm) on the control panel screen.



The measurement is taken when the end of the string comes out of the opening to the left of the tool bay. The measurement is bidirectional: depending on whether the string is pushed or pulled, the length increases or decreases.

- Cut the string with pliers when the required length is displayed. Then remove the string from the measurer.
- Return to screen 1 by pressing the key **F1**.



**BE CAREFUL:** never try to insert the string into the measurer by the opening on the left.

## ◆ RAISING PULLING HEAD

With its self-raising head, the SENSOR EXPERT stringing machine functions automatically on a perfectly horizontal plane at a constant height. This guarantees absolute precision and total string performance, because there is no rubbing between string and racket.

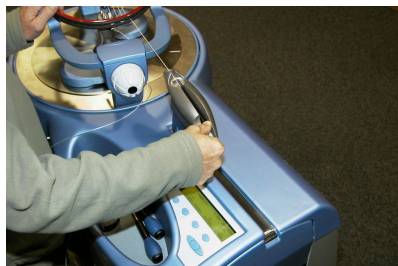
The pulling head rises automatically when the "cycle start" button is pressed and until the racket handle is presented. It drops automatically to let the racket handle pass through when the turntable rotates.

**NB:** this function can be deactivated from the control panel (see screen 2, HEAD menu).

## ◆ SPRING TENSIONING

Once the racket has been properly installed and the clamp(s) adjusted, refer to the stringing recommendations of the racket manufacturer and enter the tension value of the string (MAIN and CROSS correction) on the control panel.

- To tension the string, thread it through the pulling unit. At this point you should make a precise movement: bring the string towards you, and without letting it go, lightly touch the "cycle start" button. This precise movement is something you should get used to very quickly.



After the pulling head is activated, the pulling unit closes itself over the string. Let go of the string.

During the traction cycle, the digital display indicates the actual value of the tension applied to the string (from 0.0 kg up to the pre-set tension value).



==BABOLAT==		22 JAN. 2000 18:35	
— I —			
0.0 kg		- M -	..3..
MAIN	CROSS	TURNTABLE	SPEED

When the required tension is reached, use the 3-tooth clamp to maintain the tension of the stretched string. Lightly touch the "cycle start" button again.

The pulling head will return to its initial position:

- automatically if the BACK function is in AUTO mode,
- by lightly touching the "cycle start" button if the BACK function is in HAND mode.

When the pulling head arrives at its end of travel without the tension being reached, the buzzer goes off to indicate that the tension is not correct.

***The measuring system on your SENSOR EXPERT stringing machine is automatically adapted to the elasticity of the string (gut, synthetic, Kevlar®, etc.).***

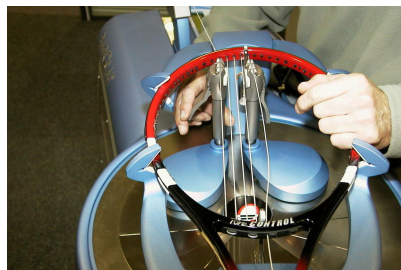
***The lifting system is fitted with a limiter that functions in the event of excessive strain on the motor. This can happen with very rigid strings of the Kevlar® (or polyester) type, which have a reduced lengthening capacity. The head rises then falls back down after one second if the stress is excessive, regardless of the position of the racket handle. You can overcome this drawback very easily by leaving a centimetre of "slack" on the part of the string in traction.***

## Clamp-holding system

With the clamp-holder you can easily position the 3-tooth clamp at any point on the racket by sliding it over the circular turntable.

During the stringing process, in order to keep the string pulled, you should:

- slide the clamp-holder over the turntable to position it under the string that you wish to keep pulled,
- tighten the string using the locking lever of the 3-tooth clamp,
- the clamp-holder is automatically immobilised on the turntable.



**Mono version:** during the following traction, the clamp-holder is unlocked automatically when the pulling head reaches 90 % of the required tension.

Loosen the string by lifting the locking lever then let the clamp drop. You can then move the clamp-holder to immobilise the stretched string.

**NB:** the automatic clamp-holder unlocking function can be deactivated from the control panel (see screen 2, CLAMPS menu).

## ◆ REMOVING THE RACKET

Always start by loosening the billiards before opening the arms. After releasing the racket, unscrew the billiards completely so that you can easily insert the next racket.

## TROUBLESHOOTING

*At power up, the digital display does not light up*

- Make sure the power cable is properly connected to the machine and to a mains socket.
- Press the "cycle start" button:
  - if the pulling arm moves, call your BABOLAT After-Sales Service Centre,
  - if the pulling arm does not move, check the fuses and replace them if necessary (see paragraph "Changing voltage or fuses").

*At power up, the digital display lights up but no messages appear*

- Press  then  several times (CONTRAST adjustment).

*At power up, the digital display lights up but the pulling arm does not move after the "cycle start" button is pressed*

- Turn off the machine, wait 30 seconds and turn it back on.
- If the problem continues, go to screen 7 on the control panel. Note down the values displayed on the DIAGNOSIS menu and the serial number of the machine, then call your BABOLAT After-Sales Service Centre.

*During the stringing process, the clamp-holder malfunctions or does not unlock*

- Call your BABOLAT After-Sales Service Centre and if the problem cannot be solved you will need to replace the circular turntable (see paragraph "Replacing the circular turntable").



## ◆ REPLACING THE CIRCULAR TURNTABLE



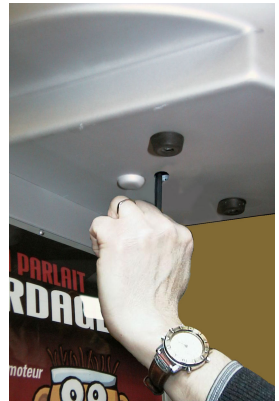
SAFETY

**Make sure the stringing machine is turned off before replacing the circular turntable.**

*BE CAREFUL: this operation must always be carried out by two people.*

The turntable is fixed by 3 screws placed at 120°. The screws can be reached through the hole, intended for this purpose, under the machine.

- Turn the circular turntable by hand to position the posts perpendicular to the line of the pulling head, with the "racket throat" positioning symbol on the side nearest to you.
- Loosen the first screw using the size-6 Allen key: it will remain captive.
- Rotate the turntable clockwise by 120°, loosen the second screw and do the same for the third.
- Rotate the turntable again by 120° to bring it back to its initial position and lock the rotating turntable (screen 1, TURNTABLE menu).
- Lift up the turntable by holding it by the posts and remove it from its central pivot.
- Replace it with the new turntable, making sure the inter-locking elements are lined up.



For re-assembly, following the dismantling procedure in the opposite order.

## MAINTENANCE



**Make sure the stringing machine is always turned off before cleaning it or servicing one of its components. Unplug the power cable from the mains socket.**

**Never wash the machine using water, a hose or high-pressure cleaning.**

*BE CAREFUL: never use corrosive products to clean your stringing machine.*

- Clean the housing of the machine regularly with alcohol at 90° only. Never use water, detergents or acetone.
- The Dual circular turntable surface should be cleaned with alcohol every week to avoid any foreign matter entering between the iron sheets. Make sure the sheets are not distorted when cleaning underneath.
- Remove the clamps, clean the clamp-holder rods and the inside of the clamp barrel with a cloth soaked in alcohol, then lubricate them lightly with oil (sewing-machine type). Be careful not to loose the spring bolt housed in the clamp-holder barrel. Replace the clamps on the clamp-holders and slide them about to spread the oil.
- Clean the inside of the clamp teeth (depending on use, every day or once a week) with a metallic brush, in order to avoid any clogging of the tungsten coating.
- The Sensor pulling head does not require any particular servicing, apart from cleaning once a year by passing a cloth soaked in alcohol between the articulated jaws of the pulling unit.

***Never oil the ball bearings on the pulling head.***

# DECLARATION OF CONFORMITY



**THE MANUFACTURER:** BABTEC, 7 rue des Genévriers 25220 CHALEZEULE FRANCE

DECLARES THAT THE MACHINE: type: SENSOR EXPERT

number: .....

- CONFORMS TO THE SETTLEMENTS OF THE MODIFIED RULES "MACHINES" (89/392/EC) AND TO THE NATIONAL REGULATIONS OF EEC COUNTRIES.
- CONFORMS TO THE SETTLEMENTS OF THE EEC RULES HEREUNDER:  
(unapplicable)

ISSUED AT CHALEZEULE, .....

**BABTEC SA**  
7, rue des Genévriers  
25220 CHALEZEULE  
Tél. : 03 81 50 00 77  
Fax : 03 81 80 62 85  
SIRET 387 829 773 00036 - APE 364Z

SIGNED BY: COURGEY Jacques  
Responsable de la fabrication

A handwritten signature in black ink, appearing to be 'JC' followed by a stylized flourish.